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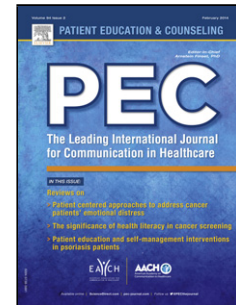
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EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

A systematic review and meta-analysis of written self-administered psychosocial interventions among adults with a physical illness

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Highlights**A systematic review and meta-analysis of written self-administered psychosocial interventions among adults with a physical illness**

- Statistically and clinically significant effects for primary outcomes (anxiety & depression)
- Significant results for secondary outcomes of distress and self-efficacy
- Results not significant for QOL and its domains (mental, physical, and social functioning)
- Guided interventions more efficacious than purely self-administered for anxiety
- Depression reduced regardless whether the intervention is purely self-administered or guided

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Abstract

Objective: The cost of implementing professionally-led psychosocial interventions has limited their integration into routine care. To enhance the translation of effective psychosocial interventions in routine care, a self-administered format is sometimes used. The meta-analysis examined the efficacy of **written** self-administered, psychosocial interventions to improve outcomes among individuals with a physical illness.

Methods: Studies comparing a **written** self-administered intervention to a control group were identified through electronic databases searching. Pooled effect sizes were calculated across follow-up time points using random-effects models. Studies were also categorised according to three levels of guidance (self-administered, minimal contact, or guided) to examine the effect of this variable on outcomes.

Results: Forty manuscripts were retained for the descriptive review and 28 for the meta-analysis. Findings were significant for anxiety, depression, distress, and self-efficacy. Results were not significant for QOL and related domains as well as coping. Purely self-administered were efficacious for depression, distress, and self-efficacy; only guided interventions had an impact on anxiety.

Conclusions: Findings showed that **written** self-administered interventions show promise across a number of outcomes.

Practice Implications: Self-administered interventions are a potentially efficacious and cost-effective approach to address some of the most common needs of patients with a physical illness.

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Keywords: self-help; anxiety; depression; chronic disease self-management; meta-analysis; knowledge translation

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1. Introduction

The diagnosis of a chronic physical illness often challenges individuals' usual ways of functioning, and represents a turning point in their life [1]. Although most individuals are able to adjust to their physical illness [1], they nonetheless remain more vulnerable to anxiety and depression than people from the general population [2, 3]. The World Health Organisation health survey reported that between 9.3% and 23.0% of individuals with one or more chronic physical illness has comorbid depression [3]. In turn, anxiety and depression have been associated with decreased treatment adherence, compromised treatment decision-making and self-care, and increased incidence of side effects and health risk behaviours [4, 5]. Hence, much effort has been devoted to developing psychosocial interventions to improve individuals' ability to cope with the challenges brought on by a physical illness.

Despite variation in terms of theoretical background, content, and mode of delivery, psychosocial interventions essentially target the psychological and behavioural processes known to predict maladjustment by providing techniques such as lifestyle management, stress management, problem-solving, education, social support, and coping skills training [6]. These interventions are most commonly hypothesised to reduce anxiety and depression and improve quality of life (QOL) [6, 7]. Numerous trials have supported this hypothesis [2, 6, 8, 9]. With this empirical support, many national and international bodies recommend psychosocial interventions to complement medical care [10, 11].

Despite the benefits of psychosocial interventions, issues pertaining to their accessibility and delivery linger [12]. Most psychosocial interventions are offered face-to-face, rendering them labour intensive and costly, whereby the resources required for their implementation often exceed the capacity of health care settings. Furthermore, there is evidence to suggest that psychosocial interventions may not be accessed by patients due to personal preference [13], geographical barriers, mobility issues [12], **direct cost**, and stigma [14]. Also, psychosocial interventions are often offered during working hours in urban centres,

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limiting their access for patients who work full-time or live in rural and remote areas [15].

Given that most interventions are planned over several sessions, it is not uncommon for a significant proportion of participants to drop-out [16]. This suggests that service providers need to consider **expanding the range of therapeutic options that individuals can access.**

The addition of a self-administered approach may accommodate patients who otherwise would not access therapy.

Self-administered interventions (also termed self-help or self-directed) address some of the issues surrounding access to professionally-led, face-to-face psychosocial interventions, including providing patients greater flexibility in terms of when and how they engage with the intervention content. Self-administered interventions have a long-history in psychology, with several meta-analyses supporting their acceptability and efficacy in the treatment of depression and anxiety [17, 18]. Less attention has been given to the efficacy of this mode of delivery in managing a physical illness and its consequences. Only recently has Matcham et al. [19] examined the effect of written self-administered interventions among individuals experiencing physical health complaints, documenting their efficacy in reducing depression (no effect noted on anxiety and distress). The present meta-analysis adds to the Matcham et al. [19] review by: (a) examining the efficacy of written self-administered psychosocial interventions that are grounded in therapeutic approaches used in professionally-led interventions such as Cognitive Behavioural Therapy (excluding information-only interventions); (b) not only including anxiety and depression as primary outcomes, but also a number of additional secondary outcomes often postulated to be affected by self-administered interventions; (c) examining the differential effect of three levels of guidance: self-administered, minimal guidance, and guided; and (d) tracking impact across short- and long-term follow-up time points.

2. Methods

2.1 Methodological Framework

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The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement was used [20].

2.2 Eligibility Criteria

2.2.1 Study type

Appropriate studies were defined as published (or in-press) randomised controlled trials (RCT) or quasi-randomised trials (i.e., participants not randomized to the control or intervention group) in a peer-reviewed journal where (a) a group of adults with a physical illness who received a written self-administered intervention was compared with a control group (usual care, an attention control, or wait list control), and (b) the outcome(s) included **anxiety and depression, distress, QOL (general, disease-specific, and by domain), self-efficacy, and/or coping.**

2.2.2 Population

Adults with a physical illness were the target population. Eating disorders and insomnia were excluded, because these are by definition psychiatric conditions. Studies examining individuals with a traumatic injury were also excluded.

2.2.3 Interventions

Studies included evaluated written self-administered (e.g., book, booklet, workbook), psychosocial (therapeutic) interventions (i.e., focused on providing strategies to help patients manage the physical and/or psychosocial challenges brought upon by an illness). The written material could be complemented by another media (e.g., DVD), but the core component of the intervention was a written, printed document. Interventions were excluded if they: (a) were structured self-management interventions led by a health professional; (b) provided illness-related information only; (c) included a pharmacological component; or (d) solely focused on exercise or diet. The review was not extended to online interventions, as written interventions still remain a popular resource used in clinical practice and a preferred format for patients, and

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not to confound results with variables pertaining to using computers and online interventions (e.g., e-health literacy) [21]. Interventions where the informal caregiver was actively engaged were also excluded due to the differential effect of dyadic versus individual-level interventions [22]. Based on Glasgow & Rosen [23], the type of support provided was categorised as self-administered (i.e., no contact with a clinician/the research team), minimal contact (i.e., contact with a clinician/the research team in the form of an initial orientation session), and guided (i.e., regular contacts with a clinician/the research team).

2.2.4 Outcomes

The primary outcomes were anxiety and depression. The secondary outcomes were distress, QOL (general, disease-specific, and by domain), self-efficacy, and coping.

2.3 Information Sources and Study Selection

Eligible studies were primarily identified through an electronic search of CINAHL, MEDLINE, PsychINFO and Web of Science. All studies were published between 1980 and May 2016, in English. Limits applied were ‘human’ and ‘all adults’. Secondary strategies included (a) perusing the reference lists of manuscripts retrieved, (b) scanning the reference lists of previous reviews, (c) contacting researchers known to conduct work in this area, and (d) using the ‘*find similar*’ function in the databases.

2.3.1 Search

The following keywords and MeSH terms were generated: (a) *terms related to self-help*: “self-care”, “self-management”, “self-directed”, “self-help”, “self-administered”, “bibliotherapy”, “unguided”, OR “self-action”; (b) *terms related to intervention*: “program evaluation”, “treatment outcome”, OR “intervention”; (c) *terms related to design*: “randomized controlled trials”, “clinical trials”, OR quasi-experimental; and (d) *terms related to outcomes*: “stress”, “adaptation”, “depression”, “anxiety”, OR “QOL”. All titles and abstracts retrieved by

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electronic searching were downloaded to a reference management database. The full electronic search strategy used for one database is included in Appendix A.

2.3.2 Study Selection

Initial assessment of eligibility was performed by the first author for all databases based on the titles and abstracts. The primary database searches were replicated by one other author. Full-texts of citations meeting the inclusion criteria were then obtained. All full-texts retrieved were independently examined by at least two authors to confirm inclusion/exclusion.

2.4 Data Extraction

Data were extracted using a standardized form based on the Cochrane Handbook for Systematic Reviews of Interventions [24]. Data were extracted by the first author and then verified by a co-author or a trained research assistant. When authors used more than one instrument to measure the same outcome, extracted data were reported from the outcome most often used across studies. For clarity, a measure was always coded to capture the same concept, even if the authors might have labelled it differently. When studies had more than one experimental arm, only those arms that met the inclusion criteria were included. As most studies assessed outcomes over time, the data extracted were categorised into three time frames: T1 – baseline to < 3 months post-intervention, T2 – 3 months to < 6 months post-intervention, and T3 – \geq 6 months post-intervention.

2.4.1 Quality Assessment

The methodological quality of studies was assessed by at least two authors independently. **The criteria used are those suggested by the Cochrane Collaboration's Risk of Bias tool [24] and Chambless and Hollon [25] to evaluate key methodological features of the studies reviewed,** and included (a) an appropriate control condition; (b) the sample size at least 25-30 per group; (c) the study reported a power calculation; (d) inclusion criteria specified; (e) information about the psychometric properties of the measures provided; (f)

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adequate generation of allocation sequence; (g) allocation to conditions concealed; (h) blinding; and (i) methods to manage incomplete outcome data mentioned.

2.5 Data Analysis

A random effects meta-analysis was undertaken to determine the pooled effect of the interventions, at each time point, using the standardised mean difference (SMD) in change from baseline. A random effects model was favored to incorporate heterogeneity in this meta-analysis.[26] Although some studies did report an estimate of the difference between groups in change from baseline, in general this information had to be calculated from other data that were reported (mean and standard deviation at each time point or the mean within group change). When the only data reported were the mean at each time point, it was assumed the correlation between the baseline measure and the follow-up measure was 0.5 to be able to calculate the standard deviation of the within person change. The random effects model was used as a conservative approach to account for different sources of variation among studies. The metan program in STATA (version 13) was used to undertake the analyses. The analysis then focused on examining the extent to which the overall SMDs varied according to the level of guidance. Statistical heterogeneity was assessed using Higgin's I^2 statistic, which describes the percentage of variation between studies above that expected by chance alone [24]. The significance level for all statistical tests was set at $p \leq 0.05$ and all tests were two-sided. Twelve studies did not report sufficient data for inclusion in the meta-analysis, and the results of these studies are reported narratively instead. Attempts were made to contact the authors to obtain the additional data needed; however, as many studies were published a few years ago, the data were not easily accessible.

3. Results

3.1 Flow of Studies through the Review

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A total of 3858 study titles were screened (see Figure 1). The secondary search strategies yielded more than 600 additional titles that were also screened. Of these, 622 abstracts were reviewed, and then 255 manuscripts were considered for full-text review. Of the 255 full-texts that were screened, 40 were retained for the descriptive review and 28 for the meta-analysis. There was no strong evidence of systematic publication bias based on the funnel plots for the two primary outcomes; however, it is noted that no non-significant, small studies were found (Appendix B).

3.2 Description of Included Studies

A detailed description of included studies is provided in Table 1. Most studies were conducted in the USA ($n = 17$), followed by the United Kingdom ($n = 8$). Thirty studies used a two-group RCT design, six studies used a three-group RCT design, and three studies used a four-group RCT design. Only one study used a quasi-experimental design.

3.3 Participants

The sample size across studies ranged from 24 to 921. Most studies included more women than men, and the mean age of participants ranged from 20.7 to 73.2 years. Physical conditions included were cancer ($n = 12$), osteoarthritis or rheumatoid arthritis ($n = 4$), irritable bowel syndrome ($n = 4$), tinnitus ($n = 3$), asthma ($n = 3$), angina pectoris or post-myocardial infarction ($n = 2$), HIV ($n = 2$), or pain ($n = 2$), or coronary artery disease, acquired chronic physical impairment, hearing loss, chronic obstructive pulmonary disease, post-ICU hospitalisation, type 2 diabetes, Meniere's disease, or heart failure ($n = 1$).

3.4 Description of the Interventions

The majority of the interventions included a combination of disease- and treatment-related information as well as information on coping with typical challenges. The inclusion of

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social comparison information through testimonials or quotes from others in a similar situation was also common [15, 27-34]. Slightly more than half of the studies delivered intervention content using a workbook/booklet and an audiotape/DVD/CD [15, 28, 33-51].

Eighteen interventions were self-administered, seven were categorised as minimal contact/support, and 18 interventions as guided (see Table 1). Minimal support was typically limited to a one-time, face-to-face orientation session (range = 5 – 30 minutes). Most studies employing guided support offered phone call follow-ups, ranging from one phone call to weekly phone calls for the duration of the intervention [37, 44, 45, 49, 52-55]. Three studies offered group sessions [30, 34, 46]. The remaining studies provided a mix of telephone, mail, and/or face-to-face support [29, 43, 51, 56-61].

3.5 Methodological Quality Assessment

Results of the methodological quality assessment are included in Table 2. Although the inclusion criteria were typically specified, almost three quarters of the studies did not report power size calculation or did not have sufficient power to detect a statistically significant difference of moderate size. With respect to comparison groups, interventions were compared to wait list control, usual care, or attention control groups. Twenty five studies gave information about the reliability and/or validity of the measures used. Slightly more studies ($n = 23$) gave sufficient information about how the allocation sequence was generated than about whether it was concealed ($n = 18$). Strategies to manage incomplete outcome data were reported in 21 studies.

3.6 Outcomes: Narrative Review and Meta-Analysis

3.6.1 Primary outcomes

3.6.1.1 Anxiety

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Figure 2 displays the Forest plots of the SMDs for the 14 studies entered in the meta-analysis. The pooled effect size of -0.17 (95% CI = -0.32 to -0.02) of the 12 studies measuring anxiety at T1 was significant. Similarly, the pooled effect size for the six studies at T2 was also significant (SMD = -0.28, 95% CI = -0.47 to -0.09). At T3, the SMD for the only study [59] entered in the meta-analysis was not significant. Of the four studies [15, 40, 41, 52] not entered in the meta-analysis, only one reported significantly lower anxiety in the intervention group than in the control group [40].

3.6.1.2 Depression

For the 19 studies entered in the meta-analysis (see Figure 3), the effect sizes were significant across all three time points. The largest effect size was noted among the 15 studies at T1: SMD= -0.35 (95% CI = -0.55 to 0.16). The second largest effect size was noted at T3, which is based on two studies: SMD= -0.33 (95% CI = -0.57 to -0.08). At T2, the pooled effect size among eight studies was slightly lower: SMD= -0.25 (95% CI = -0.44 to -0.06). Two [32, 40] of the six [15, 32, 34, 40, 41, 52] studies not included in the meta-analysis also favoured the intervention. Goepfinger et al. [34] found that the minimal contact home study intervention had no impact on depression; however, the guided small group intervention did.

3.6.2 Secondary outcomes

Findings for the secondary outcomes are summarised in Table 3.

3.6.2.1 Distress

Six studies [27, 30, 31, 38, 45, 62] were entered in the meta-analysis for distress. The only significant pooled effect size was at T2, based on two studies, SMD = -0.39 (95% CI = -0.53 to -0.26). Only one [32] of the four [32, 37, 39, 57] studies not included in the meta-analysis favoured the intervention on some aspects of distress or perceived stress.

3.6.2.3 Global quality of life

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The six studies [30, 33, 43, 53, 55, 59] entered in the meta-analysis did not result in significant pooled effect sizes. Two studies not entered in the meta-analysis [15, 28, 35, 40, 56] found a significant difference between the intervention and control groups on QOL [35, 56].

3.6.2.4 Disease-specific quality of life

Nine studies [30, 31, 44, 46, 54, 58, 61-63] were considered for the meta-analysis. None of the pooled effect sizes were significant. For the three studies [29, 57, 64] not included in the meta-analysis, only one [57] found improvements in disease-specific QOL in the intervention group in comparison to the control group.

3.6.2.5 Mental adjustment

Four [30, 33, 50, 60] studies were considered for the meta-analysis. None of the pooled effect sizes were significant. Only one [40] of the four [28, 29, 40, 41] studies not included in the meta-analysis found a significant impact of mental health on this outcome.

3.6.2.6 Physical functioning

None of the pooled effect sizes were significant for the five [30, 33, 35, 38, 60] studies included in the meta-analysis. For the studies not included in the meta-analysis [28-30, 34, 40, 41, 52], only one [52] favoured the intervention over the control group.

3.6.2.7 Social functioning

For social functioning, four [30, 33, 38, 60] studies were included in the meta-analysis. None of the pooled effect sizes were significant. Only one of the studies [28, 40] not included in the meta-analysis found that participants in the intervention group reported fewer role limitations because of emotional problems in comparison to the control group [40].

3.6.2.8 Self-efficacy

Five [35, 38, 47, 49, 60] studies were included in the meta-analysis. Two studies evaluated the effect of interventions on self-efficacy at T1, and the overall pooled effect size was significant, SMD = 0.34, 95% CI = 0.06 to 0.62. The three studies that evaluated self-efficacy at T2 support a persistent, significant effect (SMD = 0.36, 95% CI = 0.26 to 0.46).

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One of the two studies [56, 63] not included in the meta-analysis also found that the intervention had a positive impact on self-efficacy [56, 63].

3.6.2.9 Coping

Three types of coping were considered: Helplessness-Hopelessness, Anxious Preoccupation, and Cognitive Avoidance. Two [27, 45] of the six [15, 27, 28, 34, 37, 45] studies measuring this outcome were considered for the meta-analysis. Across all coping types, the effect sizes were not significant. However, most studies not entered in the meta-analysis found some support for the effects of the interventions on coping [15, 28, 34, 37].

3.7 Subgroup Analysis Based on Level of Guidance

Table 4 shows the subgroup analysis based on the three levels of guidance. Whereas the purely self-administered and minimally guided interventions had no impact on anxiety, guided interventions yielded significant results for this outcome. Conversely, depression may be reduced regardless of whether the intervention is purely self-administered or guided. Purely self-administered interventions also seem particularly efficacious in reducing distress and enhancing self-efficacy. For the remaining secondary outcomes none of the interventions types were found to have a differential impact.

4. Discussion and Conclusion

4.1 Discussion

Forty studies were reviewed to examine the efficacy of written self-administered psychosocial interventions in reducing anxiety, depression, and distress and enhancing QOL, self-efficacy, and coping among adults with a physical illness. Of note, almost half of the studies reviewed were published in the last six years, with most favouring a self-administered format because of its potential to reach a large number of individuals, in a cost-effective manner. Although self-administered interventions are increasingly delivered online [65],

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booklets remain a preferred format for patients, and popular mode to deliver self-administered interventions.

4.1.1 Methodological Quality

Few studies met all methodological quality criteria. Reviews have found that journal endorsement of the CONSORT guidelines improves reporting [66, 67]. However, overall, completeness of reporting remains sub-optimal, with items often omitted similar to the ones for the studies included in this review: generation of random allocation sequence [68, 69] and defining the methods of allocation concealment [68]. Many studies included in this review opted for a waitlist control group; however, a waitlist control group might create a sense of expectancy and does not control for non-specific treatment effects (e.g., attention given to the intervention group) [70]. Alternatively, the choice by some authors to opt for an active or attention control group might have undermined the efficacy of some studies by the control condition becoming an unintended intervention.

4.1.2 Adherence

Whether participants are receiving an adequate therapy dose to provide benefits is a critical issue in the context of self-administered interventions, as individuals might be willing to receive a minimal-intensity intervention, but this does not guarantee its use [65, 71]. In turn, low adherence might be underestimating the impact of the intervention. Most often, adherence in the studies reviewed was measured by extent of use (e.g., amount of time spent reading the manual) [15, 28, 30, 32, 33, 38, 39, 41, 45, 52, 53, 58, 59, 62]. Though few of these studies then systematically reported adherence data or used this information in the analysis. Although use is an important aspect of adherence, more importantly is whether the intervention impacts illness management skills and behaviours. Few studies measured and/or reported on the actual behaviour changes of participants as a result of the intervention [29, 34, 40, 62, 63].

4.1.3 Efficacy: Primary and Secondary Outcomes

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The current review found **at best** mixed evidence for the efficacy of written self-administered interventions in improving reported outcomes among individuals with a physical illness. For the primary outcomes, the interventions had less of an effect on anxiety than depression in the short- and long-term, but comparable effects were noted for the intermediary time point. These findings are comparable to those of the review by Matchman et al. [19]. Providing self-administered materials **seemed** to ameliorate anxiety particularly following a myocardial infarction [43], for individual undergoing a percutaneous coronary intervention [60], and among individuals with Meniere disease [63] or COPD [51]. Although lack of convincing efficacy of psychosocial interventions on anxiety has often been attributed to low baseline anxiety scores, for many of the studies reviewed that used the HADS, baseline scores were within the borderline anxiety range, overcoming the potential for floor effect [72]. Of note, for depression, intervention effects were found across all time points.

For the secondary outcomes, findings were not significant for neither QOL nor its related domains. Such findings emphasize that psychosocial interventions might show little or no change in such ‘distal’ outcomes, as these depend on factors that are not directly influenced by the interventions [73]. For this reason, researchers are increasingly advocating for the evaluation of more proximal outcomes [73]. Proximal outcomes are conceptualised to be more directly affected by an intervention and can be clearly identified from the content and goals of the intervention. Many of the interventions reviewed are grounded in the principles of self-management, whereby increasing participants’ confidence or self-efficacy to carry out a behaviour necessary to reach a desired goal was a central aim [74]. Despite this, few studies included measures of self-efficacy [35, 38, 47, 49, 56, 63]. This meta-analysis did support the impact of self-administered interventions on this outcome. However, it did not support the interventions’ efficacy on another proximal outcome, coping.

4.1.4 Efficacy: Level of Guidance

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The sub-groups analyses revealed that providing guidance was critical to impact on anxiety and depression. **Although the ES was lower**, purely self-administered interventions were also efficacious for depression. **This finding emphasizes that one key mechanism of action of the guided self-administered interventions that sets these apart from the other two types of self-administered intervention is the therapeutic relationship.** Previous research has shown that therapeutic alliance is moderately, positively associated with the success of treatment [75-77]. This is further supported by the finding that none of the sub-group analyses justified a short orientation session, which are often highly resource intensive, despite being brief. However, sub-group analyses seemed to support the efficacy of purely self-administered interventions on outcomes of distress and self-efficacy. These sub-group analyses corroborated those of other reviews [19, 65, 78], and emphasize that interventions with no therapeutic contact can still have meaningful effects.

4.1.5 Limitations

This review used reproducible methods. Despite this, a number of limitations are noteworthy. For some outcomes, the number of studies evaluated was small or significant heterogeneity was noted. **Also, few studies examined whether the mechanism of actions of the interventions were efficacious by measuring behaviour change. Another limitation is the conceptual overlap among the outcomes and the potential heterogeneity introduced by the different scales used to measure the same outcome.** The sub-optimal reporting of methodological elements in reviewed studies limits the extent to which definitive conclusions can be made. Finally, most studies were conducted with well-educated, Caucasian patients, limiting the generalizability of findings to other populations.

4.1.6 Research Implications

Future studies need to compare the efficacy of different levels of guidance directly, and examine their cost-effectiveness more thoroughly. Also, future studies could focus on

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identifying the percentage of an intervention required for participants to be considered treatment-completers. The impact of tailoring these interventions to individuals' needs has also not been examined. Future research is needed for some physical conditions, such as pain, diabetes, and cardiovascular disease. Future studies should also assess the efficacy of self-administered interventions among individuals with diverse cultural and linguistic backgrounds.

In the present review, interventions focusing exclusively on diet and/or exercise were excluded not to confound the effects of psychosocial interventions mostly focused on coping. However, there is also an increased interest in home-based physical activity interventions, with two systematic reviews already published on the topic [79, 80].

4.2 Conclusion

Written self-administered interventions for individuals with a physical illness **seem** efficacious in reducing anxiety, depression and distress and improving self-efficacy. **However, findings need to be interpreted with caution, as the** methodological quality of the research reviewed needs to be improved to strengthen the evidence-base in this field.

4.3 Practice Implications

A challenge for health systems is ensuring that the economic determinants alone do not determine treatment options for patients. Health professionals who offer counselling provide not only empathic engagement, but also exploration of misperceptions and provision of highly-tailored information, which can be closely aligned with patient needs and revised based on changing circumstances. Health systems ideally provide a suite of services incorporating both face-to-face and self-administered options. One key clinical implication of the findings is to match the level of guidance to the psychosocial outcome being targeted.

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Conflicts of interest: None

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Statement of authors' contribution

All authors have made substantial contributions to: 1) the conception and/or design of the review, acquisition of data, or analysis and interpretation of data; 2) drafting the manuscript or revising it critically; and 3) final approval of the version submitted

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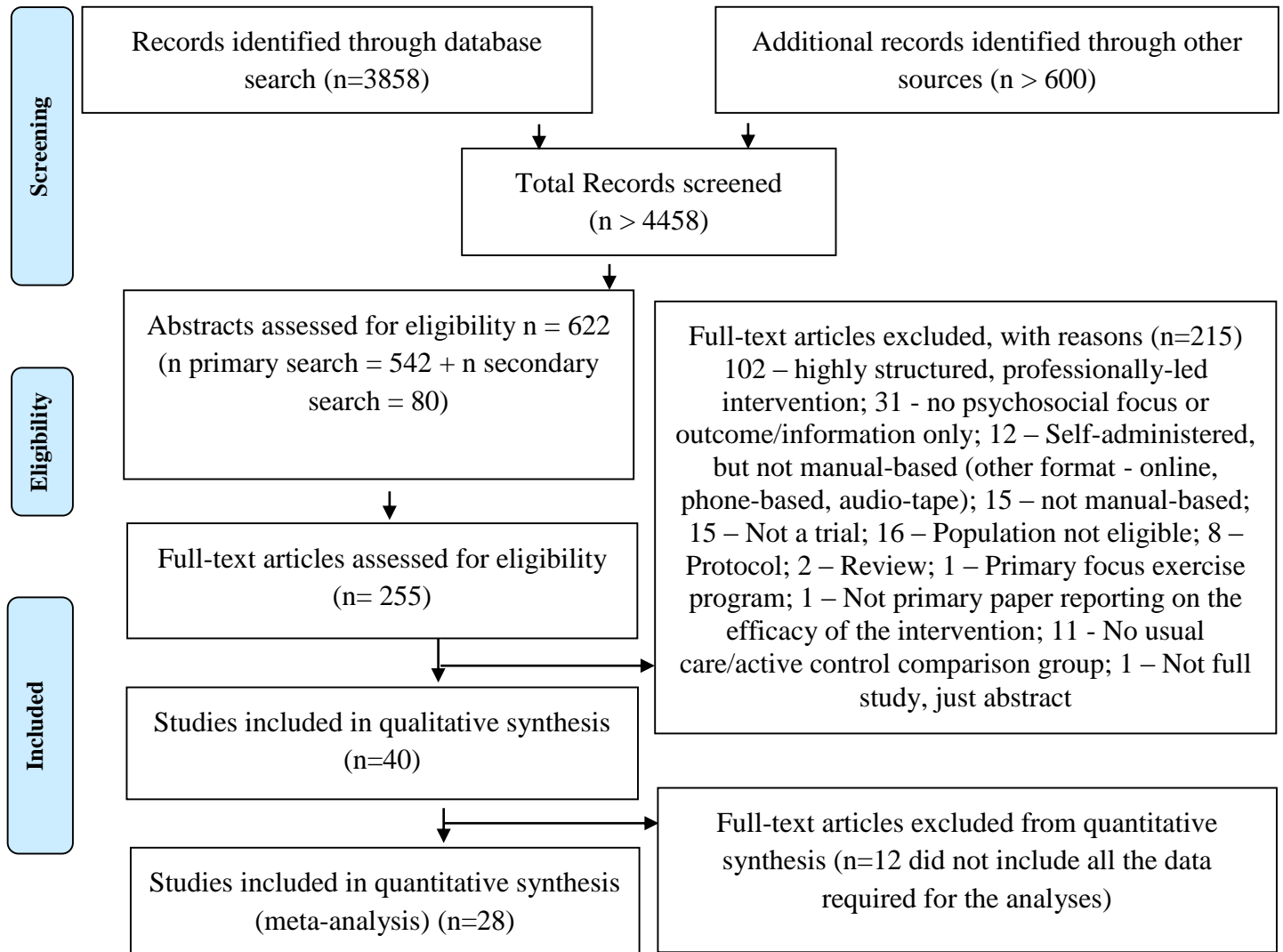


Figure 1. PRISMA flow chart of search process

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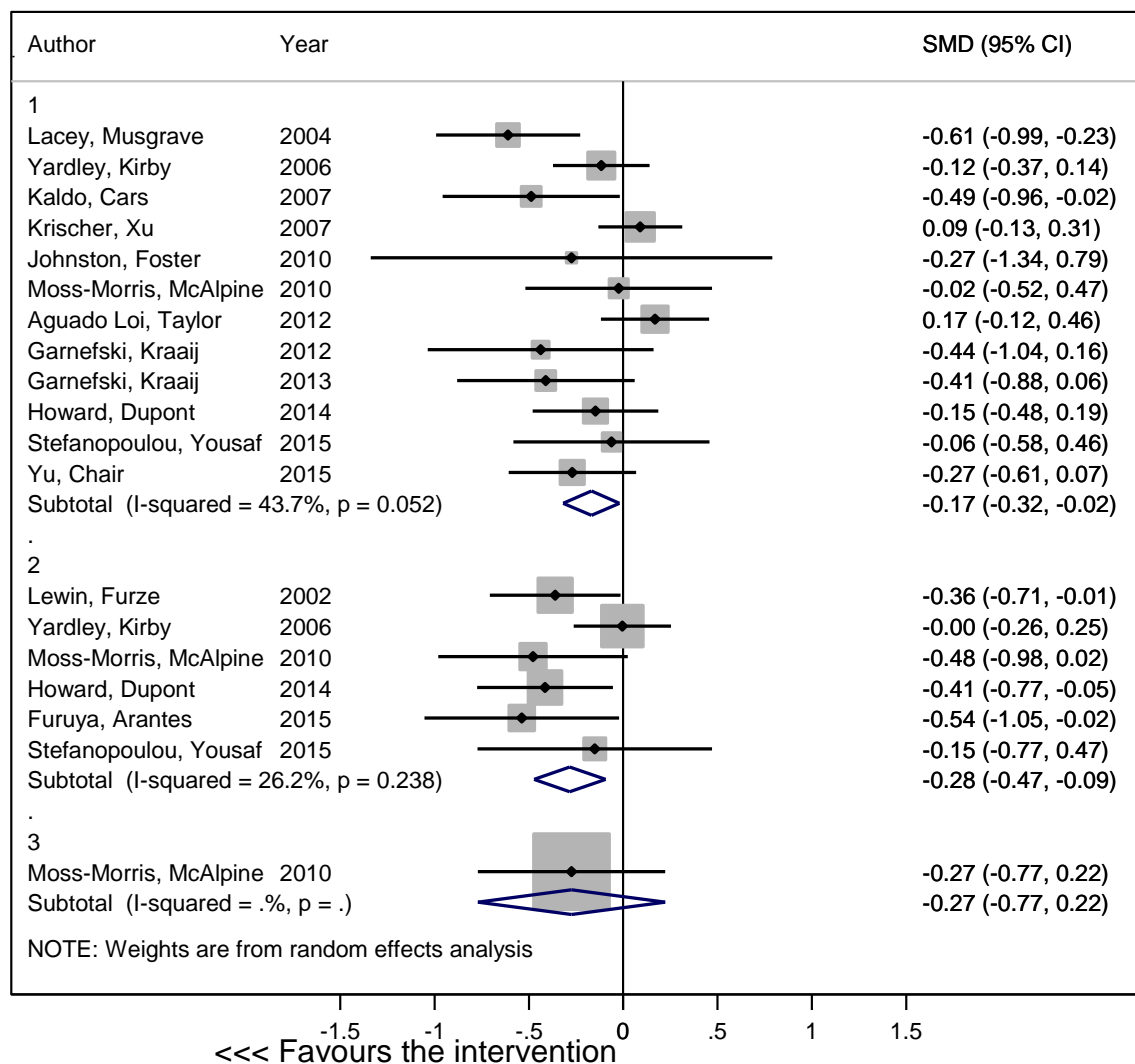


Figure 2. Standard mean differences for Anxiety. 95% CI indicates 95% confidence interval; • = effect sizes calculated for each study by outcome; ◇ = the overall standard mean difference obtained for the outcome across studies at each time interval. T1 – baseline to < 3 months post-intervention, T2 – 3 months to < 6 months post-intervention, and T3 – > 6 months post-intervention.

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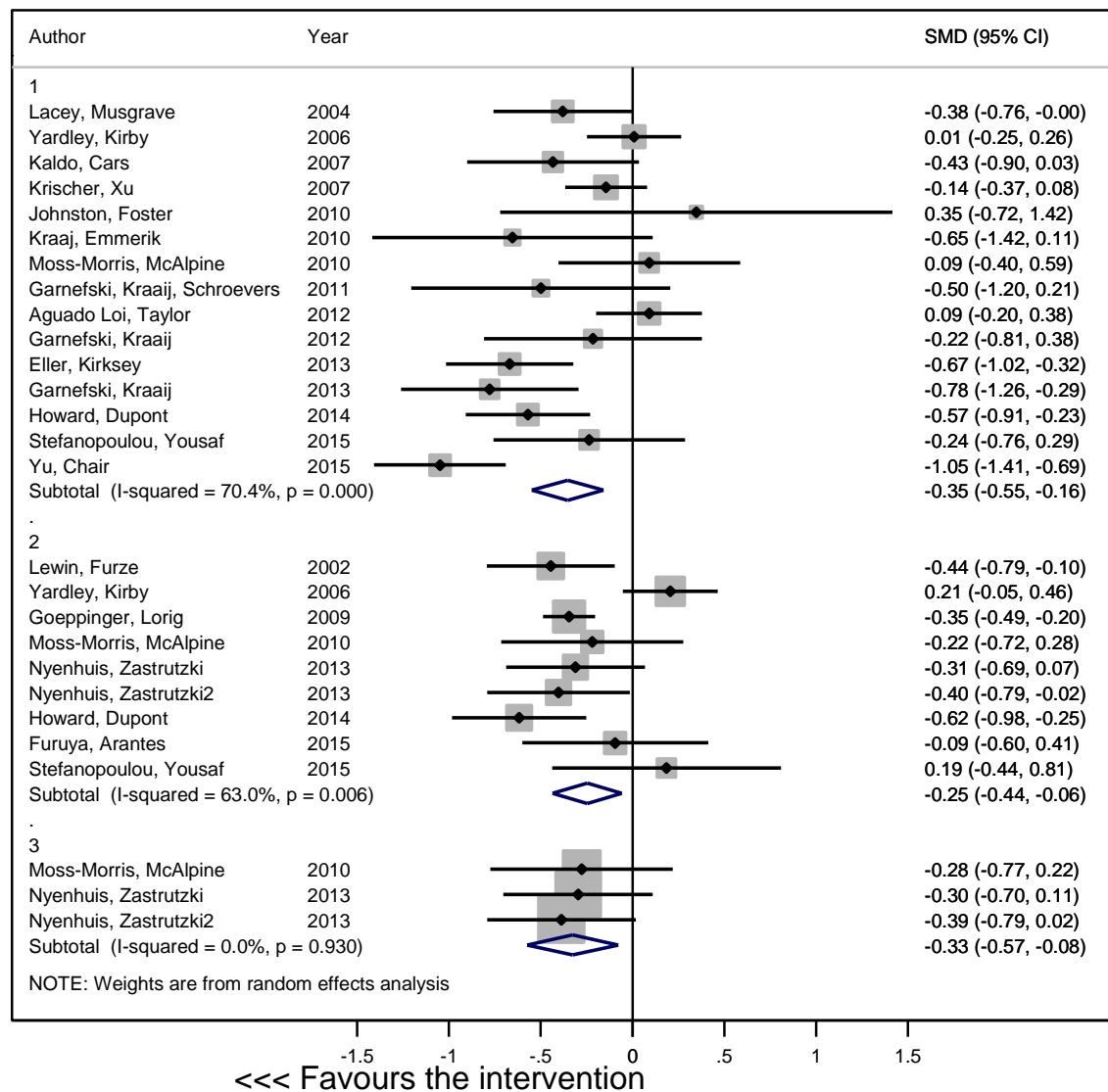


Figure 3. Standard mean differences for Depression. 95% CI indicates 95% confidence

interval; • = effect sizes calculated for each study by outcome; ◇ = the overall standard mean difference obtained for the outcome across studies at each time interval.

T1 – baseline to < 3 months post-intervention, T2 – 3 months to < 6 months post-intervention, and T3 – > 6 months post-intervention.

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Table 1.
Summary table of reviewed studies

Author Country	Aim(s)	Sample	Level of guidance Cancer	Intervention and comparison groups	Outcome(s) [±]
Aguado Loi et al. [33] USA RCT (2 groups)	Evaluate a self-administered stress management intervention among patients with cancer receiving chemotherapy	N = 220 patients with cancer undergoing chemotherapy (T = 111, C = 109) Mean age: T = 57.5 (SD = 11.9), C = 56.2 (SD = 12.0) % female: T = 73.4%; C = 85.6%	Minimal contact or support	T = Self-administered stress management therapy (booklet + DVD) C = Usual care	T = C anxiety, depression, across QOL domains
Angell et al. [27] USA RCT (2 groups)	Evaluate the impact of a workbook-journal among women with primary breast cancer	N = 98 adult women with a primary breast cancer (T = 55, C = 43) Mean age: 58.6 (no SD reported) % female: 100%	Self-administered	T = Community-based, interactive workbook + pack of educational resources C = Pack of breast cancer educational resources	T = C PTSD, mood disturbance (extracted as distress) and coping. Some within-group/interaction differences noted; no between-group effects
Beatty, Koczwara et al. [15] Australia RCT (2 groups)	Evaluate the efficacy of a self-help workbook among women recently diagnosed with breast cancer	N = 49 women recently diagnosed with breast cancer (stage 0 -II) (T = 25, C = 24) Mean age: 55.2 (SD = 12.7) % female: 100%	Self-administered	T = Self-help workbook (relaxation and meditation, coping with side effects, emotional adjustment, body image and identity, social support, survivorship) + CD C = Information booklet	T > C PTSD, helplessness - hopelessness, cognitive avoidance T = C anxiety, depression, QOL, anxious preoccupation
Beatty, Oxlad et al. [28]	Evaluate the efficacy of a self-help workbook	N = 40 women with stage I/II breast cancer, who finished treatment	Self-administered	T = Self-help workbook (maintaining medical partnership, physical well-being, feeling	T > C venting coping T = C on all other coping subscales;

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Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
Australia RCT (2 groups)	among breast cancer survivors	within the past 3 months (T = 20, C = 20) Mean age: 53.1 (SD = 11.4) % female: 100%		alone, family and friends, emotional recovery, spirituality, seeking closure, moving forward, living the life you want, local and national resources) + tape C = Wait list control	global QOL, mental health, and physical and social functioning
Gil et al. [37] USA RCT (2 groups)	Evaluate the long-term efficacy of an uncertainty management intervention for older breast cancer survivors	N = 483 recurrence-free older women who were 5-9 years post-treatment for breast cancer (T = 229, C = 254) Mean age: T White = 64.47 (SD = 8.48), T Af Am = 64.52 (SD = 8.52), C White = 64.24 (SD = 8.77), C Af Am = 65.19 (SD = 10.41) % female: 100%	Guided	T = 4 x weekly telephone calls; each focussing on one of four skills - relaxation, pleasant imagery, calming self-talk, and distraction. Calls #3 and #4 also guided through use of self-help manual + audiotape C = Usual care	At 20 months (primary endpoint). T > C cognitive reframing, knowledge, information sought and helpfulness, use of distraction, personal growth, uncertainty T = C distress, problem-solving, coping self-statement, praying/hoping, ignoring, increasing behavioural activities, catastrophizing, and diversion of attention
Jacobsen et al. [40] USA RCT (3 groups)	Evaluate the efficacy and costs of a patient self-administered form of stress management training	N = 382 adults diagnosed with cancer who had not received IV chemotherapy previously and were scheduled to receive minimum 4 cycles of chemotherapy (T1 =	Minimal contact or support	T1 = 60 min stress management session by mental health professional - paced abdominal breathing, combined abbreviated progressive muscle relaxation and relaxing mental imagery, and coping self-statements T2 = <i>Coping with Chemotherapy</i>	T2 > C QOL (better physical functioning, greater vitality, and better mental health, and fewer role limitations because of emotional problems) T1 = C QOL items

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Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
		125, T2 = 125, C = 132) Mean age: 56 (SD = 12) % female: 76%		booklet + <i>Active Relaxation</i> audiotape reflecting the same 3 components as T1 C = Usual care	T2 > C anxiety, depression
Jacobsen et al. [41] USA RCT (4 groups)	Evaluate the separate and combined effects of stress management training and home-based exercise	N = 286 adults with cancer, scheduled to receive chemotherapy for at least 9 weeks, but have not received chemotherapy within the past 2 months (T1 = 69, T2 = 62, T3 = 77, C = 78) Mean age: T1 = 57.42 (SD = 10.58), T2 = 58.72 (SD = 11.77), T3 = 57.71 (SD = 11.98), C = 57.22 (SD = 10.98) % female: T1 = 67%, T2 = 61%, T3 = 69%, C = 74%	Minimal contact or support	T1 = Stress management training, including video, booklet and audio recording <i>Coping with Chemotherapy</i> Video T2 = Video and booklet <i>Stepping Forward: A Guide to Exercise During Chemotherapy</i> , and pedometer. Info and instructions on engaging in regular exercise while undergoing chemo T3 = stress management (T1) plus home-based exercise (T2) C = Access to full range of psychosocial services offered at participating site + National Cancer Institute booklet <i>Chemotherapy and You</i>	T = C QOL T3 > C depressive symptoms, anxiety (only between baseline and 6 weeks) T3 < C anxiety (between 6 and 12 weeks) T1 = T2 = C depressive symptoms and anxiety
Krischer et al. [49] USA RCT (2 groups)	Evaluate the efficacy of a stress management intervention in patients undergoing radiotherapy for cancer	N = 310 adults with cancer who were scheduled to receive a minimum 12 radiotherapy treatments during a 21-day period (T = 154, C = 156)	Minimal contact or support	T = Videotape, booklet (education about radiotherapy and stress, and instruction in paced breathing, active relaxation, positive thinking), and <i>Active Relaxation</i> audiotape, plus 5-min meeting with clinician who explained nature and purpose of	T = C anxiety, depression, mental QOL T > C mental health

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Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
		Mean age: T = 60.3, C = 61.6 % female: T = 71.4%, C = 71.8%		intervention C = Usual care	
Mishel et al. [45] USA RCT (2 groups)	Test the efficacy of a theoretically-based uncertainty management intervention delivered to older long-term breast cancer survivors	N = 509 survivors who were 5-9 years post breast cancer treatment (T = 244, C = 265) Mean age: T = 64.3 (SD = 8.32), C = 64.5 (SD = 9.39) % female: 100%	Guided	T = Two main components - cognitive strategies delivered via audiotapes (emotion-focused coping responses), and behavioural strategies packaged in self-help manual (management skills, information on side effects, and cancer resources). Women guided through intervention via 4 x weekly telephone sessions with study nurse C = Usual care	T > C cognitive reframing, cancer knowledge, patient-provider communication, social support satisfaction, catastrophizing (extracted as helplessness-hopelessness for African American sub-group) amount and helpfulness of information/resources obtained T = C problem solving, ignoring sensations (extracted as cognitive avoidance), distress
Phillips et al. [46] USA RCT (4 groups)	Evaluate whether self-directed stress management and/or home-based exercise training led to improvements in	N = 391 adults with cancer, scheduled to receive chemotherapy for ≥ 9 weeks (T1 = 101, T2 = 90, T3 = 102, C = 98)	Minimal contact or support	Same as study Jacobsen et al. [41]	SM > C perceived ability to relax EX and SMEX > C awareness of tension SMEX > C perceived ability to get needs

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
	specific stress management skills	Mean age: T1 = 57.35 (SD = 11.51), T2 = 59.05 (SD = 11.69), T3 = 59.60 (SD = 11.56), C = 56.40 (SD = 11.65) % female: T1 = 65%, T2 = 66%, T3 = 66%, C = 66%			met SM = EX = SMEX = C coping confidence SMEX > C increased perceived ability to use SM techniques
Stefanopoulou et al. [55] UK RCT (2 groups)	Examine the effects of a guided self- help cognitive- behavioural treatment (CBT) intervention among men with prostate cancer undergoing androgen deprivation therapy	N = 68 men with prostate cancer undergoing androgen deprivation therapy (T = 33, C = 35) Mean age: T = 67.97 (SD = 7.7), C = 69.71 (SD = 7.9) % female: 0%	Guided	T = 4-week intervention consisting of a booklet that included information about hot flashes and night sweats, cognitive therapy and behavioural strategies, CBT strategies for managing sleep, suggestions for maintaining changes in the context of prostate cancer. Guidance included a telephone call from a psychologist C = Usual care	T > C in reduction of hot flushes and night sweats (HFNS) problem-rating and weekly frequency at 6 weeks T = C in reduction of HFNS problem-rating and weekly frequency at 32 weeks; depression; anxiety and QOL at 6 and 32 weeks
Stiegelis et al. [32] Netherlands RCT (2 groups)	Examine whether an informational self- management intervention is useful for patients after final treatment with radiotherapy who perceive little control and report uncertainty	N = 209 adults diagnosed with cancer undergoing radiotherapy treatment (T = 103; C = 106) Mean age: T = 60.3 (SD = 12.5, C = 60.6 (SD = 11.7) % female: T = 67%, C	Self- administered	T = <i>Coping with Cancer</i> - The booklet contained general and specific information about cancer and cancer treatment, information about possible coping strategies, and social comparison information, which consisted of short stories of other patients C = Usual care	T (patient with high uncertainty, less control) > C tension, anger, depression (extracted as distress) T = C fatigue, vigour

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
		= 64%			
Osteoarthritis or rheumatoid arthritis					
Fries et al. [35] USA RCT (2 groups)	Examine the effectiveness of a mail-delivered arthritis self-management program	N = 809 patients with osteoarthritis or rheumatoid arthritis (T = 375, C = 434) Mean age: T = 63.6 (SD = 0.7), C = 63.4 (SD = 0.7) % female: T = 71%, C = 73%	Self-administered	T = Health assessment questionnaires mailed to participants, leading to the computer-generation of individualised intervention recommendation letters and progress reports. Also received <i>The Arthritis Helpbook</i> , a relaxation audiotape and exercise videotape C = Wait list control	T > C function and global vitality (extracted as QOL), exercise times/week, self-efficacy, pain, tender joint count, doctor visits
Garnefski et al. [48] Netherlands RCT (2 groups)	Examine a cognitive-behavioral self-help program (CBS) program with minimal coaching in people with rheumatic disease and depressive symptoms	N = 82 adults with some form of rheumatic disease and mild to moderate depressive symptoms (T = 41, C = 41) Mean age: T = 49.12 (SD = 9.79), C = 47.61 (SD = 12.62) % female: T = 90.2%, C = 92.7%	Guided	T = CBS described in Garnefski, Kraaij & Schroevers [36] C = Wait list	T > C depressed mood, anxiety, coping self-efficacy

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
Goeppinger et al. [38] USA RCT (2 groups)	Determine the effectiveness of an arthritis self-management Toolkit	N = 921 adults diagnosed with osteoarthritis, rheumatoid arthritis, fibromyalgia, or with chronic joint symptoms (T = 458, C = 463) Mean age: T = 54.3 (SD = 12.2), C = 53.4 (SD = 12.3) % female: T = 84.6%, C = 86.2%	Self-administered	T = The <i>Arthritis Self-Management Toolkit</i> - "Self Test" to determine how arthritis affects life and self-tailor use of Toolkit, information sheets on working with health care team, exercise, medications, healthy eating, fatigue, pain management, community resources and dealing with emotions, information sheets on process components of action planning, problem solving, deciding what to try, individualising exercise program, <i>The Arthritis Handbook</i> , audio relaxation and exercise CDs and audio CD of all information sheet content C = 4-month wait list control	T > C health-related behaviours, self-efficacy, depression, pain, fatigue, disability (extracted as physical functioning), distress, activity limitation (extracted as social functioning) T = C medical care utilisation, self-rated health
Goeppinger et al. [34] USA RCT (3 groups)	Examine the effectiveness of two models of arthritis self-care intervention: the home study and the small group model	N = 374 adults with arthritis (HS = 121, SG = 100, C = 153) Mean age: 62.44 (SD = 11.25) % female: 87%	T1 = Minimal contact or support T2 = Guided	<i>Bone Up On Arthritis</i> delivered to all participants (emphasised self-care, problem identification and problem solving), via two different pathways: T1 = Home study model: 6 lessons, accompanied by booklet and audiotope, mailed to participants' homes T2 = Small group model: Same lesson number and content as T1 model (except for audiotope) + informal 2 hour class; lessons	T1 & T2 > C arthritis knowledge, self-care behaviour, and feelings of helplessness T1 = T2 = C depression, function, and pain T2 > T1 pain and depression T1 > T2 perceived helplessness

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
				held in community sites C = Wait list control	
Irritable bowel syndrome (IBS)					
Lackner et al. [57] USA RCT (3 groups)	Test the effects of self-administered CBT	N = 75 adult patients with IBS symptoms of at least moderate severity (T1 S-CBT = 23, T2 MC-CBT = 25, C = 27) Mean age: T1 = 48.13 (SD = 18.2), T2 = 41.9 (SD = 13.6), C = 49.7 (SD = 17.6) % female: T1 = 91.3%, T2 = 76%, C = 92.6%	Guided (T2 extracted)	T1 = 10 weekly 1 hour therapist- led sessions involving education on stress and IBS, self- monitoring of stress, muscle relaxation, cognitive restructuring and training in problem solving + weekly home exercises T2 = Minimal contact CBT, T1 content delivered using self-study materials. 4 x 60 min clinic visits + two telephone calls to troubleshoot problems C = Wait list control	T1 and T2 > C adequate relief from abdominal pain and bowel symptoms, patient global improvement, reduced QOL impairment and severity of IBS symptoms, but T1 = T2 for same T1 = T2 = C distress
Moss-Morris et al. [59] New Zealand RCT (2 groups)	Test the efficacy of a manualized CBT- based self- management program for IBS	N = 64 primary care patients with IBS (T = 31; C = 33) Mean age: T = 40.0 (SD = 18.0), C = 39.0 (SD = 15.9) % female: T = 73%; C = 73%	Guided	T = A structured 7-week manualized program that was self-administered in conjunction with a 1-hour face-to-face therapy session and two 1-hour telephone sessions C = Usual care	T > C adjustment (extracted as QOL), relief, IBS symptom severity, anxiety T = C depression

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
Robinson et al. [30] UK RCT (3 groups)	Test the impact of two self-help interventions (a comprehensive self-help guidebook and a self-help group) in patients with functional bowel disease	N = 420 adults with IBS (T1 = 141, T2 = 139, C = 140) Mean age: 40 (SD = 14.4) % female: 89%.	T1 = Self-administered T2 = Guided	T1 = Self-help guidebook (information about lifestyle, diet, and pharmacological and alternatives therapies) T2 = Self-help guidebook (as above) + invitation to attend one-off 2-hour self-help group meeting C = Usual care	T1 > C GP visits (T2 = C for same) T1 > C hospital visits T1 and T2 > C perceived symptom severity, but T1 = T2 for same T1 = C General QOL and domains T1 and T2 = C patient global impression, distress, disease-specific QOL T1 and T2 > C improvement IBS symptoms (T1 = T2 for same) T2 > C physical functioning T1 = T2 = C symptoms
Sanders et al. [31] USA RCT (2 groups)	Examine the efficacy of a self-help book in reducing IBS symptoms when compared to a wait list control	N = 28 adults with IBS (T = 17, C = 11) Mean age: T = 56.9 (SD = 14.6), C = 41.8 (SD = 10.3) % female: T = 71.4%, C = 88.9%	Self-administered	T = <i>Breaking the Bonds of IBS</i> - a self-help guide for IBS symptom management using CBT. The book also contains quotations and stories from patients and information related to the digestive system, diagnostic medical tests, diet, and available medical and psychological treatments C = Wait list control	T = C disease-specific QOL, constipation, diarrhea, bloating, psychological symptoms (distress) T > C pain and GI average symptoms

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
Tinnitus					
Kaldo et al. [54] Sweden RCT (2 groups)	Examine the efficacy of a CBT-based self-help book supplemented with weekly telephone calls on tinnitus distress	N = 72 adults with tinnitus (T = 34, C = 38) Mean age: T = 45.9 (SD = 13.0), C = 48.5 (SD = 15.7) % female: T = 50%, C = 47%	Guided	T = CBT-based self-help book, including information, defining treatment goals, relaxation exercises, sound-based tools, cognitive restructuring, sleep management, evaluation, relapse prevention + 7 telephone calls with therapist x 6 weeks to evaluate progress, give advice and gain feedback on progress C = Wait list control	T > C tinnitus annoyance and distress (extracted as disease-specific QOL), anxiety, depression, tinnitus loudness, quality of sleep T = C perceived stress
Malouff et al. [62] Australia RCT (2 groups)	Examine the efficacy of a cognitive-behavioural based self-help book in assisting individuals experiencing distress related to tinnitus	N = 162 individuals experiencing distress related to tinnitus (T = 84; C = 78) Mean age: T = 57.3 (SD = 13.7), C = 57.8 (SD = 13.3) % female: T = 49%; C = 39.7%	Self-administered	T = Cognitive-behavioural based self-help book C = Wait list control	T > C distress T = C tinnitus-related distress (disease-specific QOL)
Nyenhuis et al. [51] Germany RCT (4 groups)	Compare the efficacy of a cognitive-behavioural intervention to the information-only control condition	N = 304 adults with idiopathic tinnitus for 2-26 weeks and not receiving any other tinnitus-related psychological treatment (T1 Group = 71, T2 Internet = 79, T3 Bibliotherapy = 77, C = 77)	T1 = Guided T3 = Self-administered	All treatments based on CBT-oriented <i>Tinnitus Coping Training</i> manual T1 Group = Contents of manual presented in 4 x 2-hour meetings with psychologist, including progressive muscle relaxation (PMR) and exercises given to complete at home T2 Internet = Complete manual given, with content written as	T1 and T2 > C tinnitus distress T3 = C tinnitus distress T1 > C depressive symptoms, but T2 and T3 = C T1, T2 and T3 = C psychosomatic discomfort

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
		Mean age (all): 48.5 (SD = 12.8) % female: Overall = 45.4%		web pages and PMR instructions downloadable T3 Bibliotherapy = Complete manual given, with PMR CD C = Booklet containing information on tinnitus	
Asthma					
Hockemeyer & Smyth. [39] USA RCT (2 groups)	Examine the feasibility and effectiveness of a stress management workbook	N = 54 college students diagnosed with asthma (T = 27, C = 27) Mean age: 20.70 (SD = 5.37) % female: T = 55.6% C = 51.9%	Self- administered	T = Tape-recorded deep- breathing relaxation exercise, CBT, and a 20-minute exercise in which participants were to write about a stressful life event C = Parallel workbook to treatment group, which differed only in content. Audiotapes contained asthma education, 'problem-solving' exercises (brain teasers) instead of CBT exercises and writing about personal time- management plans instead of stressful life events	T = C perceived stress levels T > C pulmonary function
Mancuso et al. [29] USA RCT (2 groups)	Evaluate the impact of an educational intervention in the primary care setting designed to improve asthma knowledge and self-efficacy on QOL and need for emergency department visit and hospitalizations	N = 180 individuals with asthma (T = 90, C = 90) Mean age: T = 42 (SD = 14), C = 43 (SD = 13) % female: T = 83%, C = 84%	Self- administered	T = Workbook + brief review with study personnel + assistance with generating contract to adopt behaviour to improve asthma. Weekly telephone contacts for 12 weeks to encourage workbook reading and perseverance with contract. Then telephone contacts every 3 months per controls C = Three brochures from American Lung Association +	24 months (primary endpoint). T = C asthma-related QOL, general physical and mental QOL, emergency department visits and hospitalisations for asthma

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
				telephone contacts every 3 months to enquire about interval emergency department visits and hospitalisations for asthma	
Mancuso et al. [58] USA RCT (2 groups)	Test an educational intervention to improve self-management by increasing asthma knowledge and self-efficacy in patients presenting to the ED for asthma	N = 296 adults with asthma (T = 148; C = 148) Mean age: T = 45 (SD = 13), C = 43 (SD = 14) % female: T = 66%, C = 77%.	Self-administered	T = Workbook + brief review with study personnel and training in inhaler use + assistance with generating contract to adopt behaviour to improve asthma. Weekly telephone contacts for 8 weeks, then same contact schedule as for C group the following year C = Three brochures from American Lung Association + brief review of these materials with study personnel and telephone contact at weeks 4, 8, 12, 16 and 52 weeks	8 weeks (primary endpoint). T = C Asthma-related QOL, ED visits
Angina pectoris or post-myocardial infarction					
Lacey et al. [43] UK Quasi-experimental (2 groups)	Evaluate the impact of the <i>Heart Manual</i> , alongside existing cardiac rehabilitation provision, after acute myocardial infarction	N = 152 patients following a myocardial infarction (T = 61; C = 91) Mean age: T = 67.7 (SD = 11.6), C = 66.9 (SD = 11.5) % female: T = 34.4%; C = 33%	Guided	T = <i>Heart Manual</i> - self-help package that includes rehabilitation and lifestyle information and relaxation exercises + audiotape and an exercise plan. Facilitator provided support by telephone or face-to-face meeting during the first 6 weeks after myocardial infarction C = Usual care	T > C anxiety and depression T = C general health status (QOL)

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
Lewin et al. [44] UK RCT (2 groups)	Evaluate the effect of a cognitive behavioural disease management program, in patients newly diagnosed with angina pectoris	N = 142 individuals diagnosed with angina pectoris in the preceding 12 months (T = 68, C = 74) Mean age: T = 66.74 (SD = 9.37), C = 67.64 (SD = 9.01) % female: T = 43%, C = 38%	Guided	T = <i>The Angina Plan</i> - workbook and audiotaped relaxation program provided during interview with nurse + brief telephone calls at end of weeks 1, 4, 8 & 12 to discuss goals C = Routine educational sessions - personal risk factors identified by nurse and how to reduce, questions, discuss impact of condition on life, written materials	T > C anxiety and depression, angina attacks, use of glyceryl Trinitrate (GTN) and physical limitations T = C pain, duration of event, angina stability, angina frequency, treatment satisfaction, disease perception (extracted as disease-specific QOL)
HIV					
Eller et al. [76] USA RCT (2 groups)	Examine the effects of the HIV/AIDS Symptom Management Manual compared with a nutrition manual among people living with HIV/AIDS	N = 222 HIV-positive individuals (T = 124, C = 98) Mean age: T = 42.7 (SD = 9.8), C = 43.6 (9.4) % female: T = 39.5%, C = 44.9%	Minimal contact or support	T = HIV/AIDS Symptom Management Manual C = Manual titled " <i>Nutritional Care and Support for People Living with HIV/AIDS</i> "	T = C depression
Kraaij et al. [42] Netherlands RCT (3 groups)	Examine the effectiveness of a cognitive- behavioural self- help (CBS)intervention in people with HIV	N = 44 individuals with HIV (T1 = 13, T2 = 16, C = 15) Mean age: T1 = 45.62 (SD = 6.55), T2 = 55.31 (SD = 6.86), C = 46.60 (SD = 7.43) % female: T1 = 15.4%,	T1= Self- administered	T1 = CBS program - Workbook, work program and CD-ROM (relaxation, cognitive restructuring, goal formulation and self-efficacy improvement) T2 = Structured writing intervention (SWI): website- based four weekly 30-min	T1 > C depressive symptoms T2 = C depressive symptoms

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
		T2 = 6.2%, C = 13.3%		writing assignments; writing to describe thoughts and feelings C = Wait list control	
Pain					
Burton et al. [64] UK RCT (2 groups)	Determine the impact of an educational booklet among patients seeking treatment for low back pain	N = 162 individuals seeking treatment for nonspecific low back pain (T = 83, C = 79) Mean age: T = 42.6 (SD = 10.9), C = 44.7 (SD = 12.2) % female: T = 49%, C = 61%	Self- administered	T = <i>The Back Book</i> (spine is strong, interpreting back pain, being active is best way to get back to feel better, and positive attitudes are important) C = <i>Handy Hints</i> - traditional biomedical information about spinal anatomy and damage, advice to rest, describes investigation and surgery, focus on pain rather than on activity	T > C improvement in beliefs about activity and beliefs about inevitable consequences of back trouble T = C improvement in disability and pain (extracted as disease- specific QOL)
Johnston et al. [53] New Zealand RCT (2 groups)	Evaluate an Acceptance Commitment Therapy (ACT) based self-help book for people with chronic pain	N = 24 adults who experience chronic pain (T = 12, C = 12) Median age: 43 % female: 62.5%	Guided	T = ACT-based book titled <i>Living Beyond Your Pain</i> + workbook (weekly reading requirements, space to write and complete exercises from book and list of questions relating to the weekly content that were to be asked at telephone calls) C = Wait list control	T > C QOL, anxiety T = C acceptance, satisfaction with life, values illness, pain, depression
Coronary artery disease					

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
Furuya et al. [60] Brazil RCT (2 groups)	Examine the effects of an educational program with telephone follow-up to improve self-care in patients who underwent percutaneous coronary intervention	N = 60 patients preparing for their first percutaneous coronary intervention (T = 34, C = 32) Mean age: T = 63.3 (SD = 12.4), C = 60.6 (SD = 8.7) % female: T = 40%, C = 46.7%	Guided	T = Program consisted of three booklets: Percutaneous transluminal coronary angioplasty, Going home after your coronary angioplasty, and How to take care of your heart and your health. Guidance provided through initially individual instruction and three telephone calls C = Usual care	T > C anxiety T = C QOL and related domains, self-efficacy, depression, and medication adherence
Acquired chronic physical impairment					
Garnefski et al. [36] Netherlands RCT (2 groups)	Examine the efficacy of a cognitive-behavioural self-help (CBS) program in people with acquired chronic physical impairments	N = 32 adults with acquired chronic physical impairments and depressive symptoms (T = 15, C = 17) Mean age: T = 49.20 (SD = 15.60); C = 45.59 (16.03) % female: T = 86.7% C = 82.4%	Self-administered	T = CBS program (workbook, work program and CD-ROM, which focused on: relaxation, changing maladaptive cognitions, and the attainment of personal life goals) C = No resource supplied until study completion	T > C depression
Hearing loss					
Garnefski & Kraaij [47] Netherlands RCT (2 groups)	Examine the effectiveness of a CBS program in people with acquired deafness	N = 45 adults with acquired deafness and at least mild depression and/or anxiety (T = 19, C = 26) Mean age: T = 59.05	Self-administered	T = CBS described in Garnefski, Kraaij & Schroevers [36] C = No resource supplied until study completion	T < C depression and anxiety

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
		(SD = 15.30); C = 55.61 (SD = 14.86) % female: T = 38.5% C = 61.5%			
Chronic obstructive pulmonary disease (COPD)					
Howard & Dupont [50] UK RCT (2 groups)	Examine the comparative effectiveness of a cognitive-behavioural manual versus information booklets for adults with COPD	N = 222 adults with COPD (T = 112, C = 110) Mean age: T = 71.2 (SD = 10.4), C = 73.2 (SD = 11.4) % female: T = 56% C = 59%	Guided	T = Self-help intervention, including CBT-based COPD breathlessness manual. Initial in-person session followed by two telephone calls C = COPD Booklets from the British Lung Foundation	T > C Accident & Emergency (A&E) visits, anxiety, depression, dyspnea, fatigue, emotional function, mastery (control) T=C in hospital admissions
post-ICU hospitalisation					
Jones et al. [52] UK RCT (2 groups)	Evaluate a 6-week rehabilitation program post-ICU on patients' physical and psychological recovery	N = 126 patients who had been admitted to ICU ≥ 48 hrs and ventilated (T = 69, C = 57) Mean age: T = 57 (SD = 17), C = 59 (SD = 16) % female: T = 46.4%, C = 42.1%	Guided	T = Routine ICU follow-up + 6-week rehabilitation package + self-directed exercise program + telephone calls C = Routine ICU follow-up (followed up on ward after ICU discharge, 3 x telephone calls once at home, ICU follow-up clinic at 8 weeks and 6 months)	6 months (primary endpoint). T > C physical function T = C depression, perceived social support, anxiety, PTSD symptoms
Type 2 diabetes					
Moriyama et al. [56]	Examine the efficacy of a self-management	N = 65 outpatients with type 2 diabetes (T = 42; C = 23)	Guided	T = Self-management textbook + < 30 min of monthly interviews based on the program + biweekly	T > C QOL, dietary changes T = C self-efficacy,

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s) [±]
Japan RCT (2 groups)	education program for type 2 diabetes	Mean age: T = 66.4 (SD = 9.2), C = 65.2 (SD = 8.5) % female: T = 59.5%; C = 56.2%		telephone calls from a nurse educator for 12 months C = Textbook, describing the clinical characteristics, treatment methods available, and self- control measures for diabetes	triglyceride, cholesterol level, complication prevention, abdominal circumference, exercise stage, BP, body weight, HbA1C
Meniere's disease					
Yardley & Kirby [63] UK RCT (3 groups)	Examine the effectiveness of booklet-based education in vestibular rehabilitation and symptom control techniques to manage vertigo and dizziness in Meniere disease	N = 360 members of the Meniere's Society, experiencing symptoms of dizziness or imbalance over the past 12 months (T1 =120, T2 = 120; C = 120) Mean age: T1 = 58.0 (SD = 11.4); T2 = 60.0 (13.6); C = 59.7 (SD = 11.8) % female: T1 = 72.5; T2 = 62.5%, C = 70.8%	T2 = Self- administered	T1 = Vestibular rehabilitation booklet explained how inadequate central compensation could contribute to symptoms and daily balance training exercises introduced T2 = Symptom control-based education booklet explained how stress could augment symptoms of dizziness and nausea and introduced stress-reduction techniques C = Wait list control	(T1 = T2) > C = improvement in health, enablement (entered as self- efficacy) T1 > C = symptoms, anxiety, handicap, beliefs T2 > C handicap (extracted as disease- specific QOL) T1 = T2 = C depression T2 = C symptoms, anxiety, beliefs
Heart Failure					
Yu et al. [61] China RCT (2 groups)	Examine the effectiveness of a guided booklet- based health education intervention	N = 160 heart failure patients (T = 80, C = 80) Mean age: T = 59.7 (SD = 11.3), C = 59.0 (SD = 10.3) % female: T = 36.2%,	Guided	T = Guided health education including face-to-face education sessions to introduce booklet on heart failure and relevant self- management strategies, augmented by weekly follow-up telephone calls when discharged home x 4 weeks	T > C medication adherence, QOL and physical and emotional domains, anxiety, depression

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author Country	Aim(s)	Sample	Level of guidance	Intervention and comparison groups	Outcome(s)[±]
		C= 32.5%		C = Usual care	

Notes. ± = post-intervention on the primary and secondary outcomes of interest in this review reported only, and only intention-to-treat outcomes are reported (where these analyses were conducted); T = treatment condition; C = control condition; QOL = quality of life; CBT = cognitive behavioural therapy; IBS = irritable bowel syndrome; HbA1c = glycosylated haemoglobin; T > C = treatment significantly superior to control; T < C = control superior to treatment; T = C = no significant differences between.

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Table 2.
Methodological quality of included studies

Author	Comparison condition	N > 25 per group	Power for moderate effect	Inclusion criteria specified	Psychometric properties of measures	Adequate sequence generation	Allocation concealment	Blinding	Incomplete outcome data addressed
Aguado Loi et al. [33]	Usual care	+	+	+	+	+	+	+	+
Angell et al. [27]	Attention control	+	-	+	+	-	-	+	-
Beatty, Koczwara et al. [15]	Attention control	-	-	+	-	+	+	-	+
Beatty, Oxlad et al. [28]	Wait list control	-	-	+	-	+	+	-	+
Burton et al. [64]	Attention control	+	-	+	-	+	+	+	+
Eller et al. [76]	Attention control	+	+	+	+	-	-	-	-
Fries et al. [35]	Wait list control	+	-	-	+	-	-	-	-
Furuya et al. [60]	Usual care	+	-	+	+	+	+	-	-
Garnefski et al. [36]	Wait list control	-	-	+	-	+	-	-	-
Garnefski & Kraaij. [47]	Wait list control	-	-	+	+	+	-	-	-
Garnefski et al. [48]	Wait list control	+	-	+	+	+	-	-	+
Gil et al. [37]	Usual care	+	-	+	+	-	-	-	-
Goeppinger et al. [38]	Wait list control	+	+	+	+	-	-	-	+

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author	Comparison condition	N > 25 per group	Power for moderate effect	Inclusion criteria specified	Psychometric properties of measures	Adequate sequence generation	Allocation concealment	Blinding	Incomplete outcome data addressed
Goeppinger et al. [34]	Wait list control	+	-	+	+	-	-	-	-
Hockemeyer & Smyth [39]	Attention control	+	-	+	+	-	-	-	-
Howard & Dupont [50]	Attention control	+	+	+	+	+	-	+	-
Jacobsen et al. [40]	Usual care	+	-	+	+	+	+	-	+
Jacobsen et al. [41]	Attention control	+	-	+	-	+	-	-	-
Johnston et al. [53]	Wait list control	-	-	+	-	-	-	-	+
Jones et al. [52]	Usual care	+	-	+	-	-	+	+	-
Kaldo et al. [54]	Wait list control	+	-	+	+	-	+	-	+
Kraaij et al. [42]	Wait list control	-	-	+	+	+	-	-	-
Krischer et al. [49]	Usual care	+	-	+	-	+	+	-	+
Lacey et al. [43]	Usual care	+	-	+	-	-	-	-	-
Lackner et al. [57]	Wait list control	-	-	+	-	+	-	-	+
Lewin et al. [44]	Attention control	+	-	+	+	-	+	+	+
Malouff et al. [62]	Wait list control	+	-	+	+	-	+	-	-
Mancuso et al. [29]	Attention control	+	+	+	+	-	-	+	+

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Author	Comparison condition	N > 25 per group	Power for moderate effect	Inclusion criteria specified	Psychometric properties of measures	Adequate sequence generation	Allocation concealment	Blinding	Incomplete outcome data addressed
Mancuso et al. [58]	Attention control	+	+	+	+	+	+	+	+
Mishel et al. [45]	Usual care	+	-	+	+	+	-	-	-
Moriyama et al. [56]	Attention control	+	-	+	-	-	-	-	-
Moss-Morris et al. [59]	Usual care	+	-	+	-	+	+	+	+
Nyenhuis et al. [51]	Attention control	+	+	+	+	+	-	+	+
Phillips et al. [46]	Attention control	+	+	+	+	+	+	-	+
Robinson et al. [30]	Usual care	+	-	+	-	+	+	-	+
Sanders et al. [31]	Wait list control	-	-	+	-	+	+	-	-
Stefanopoulou et al. [55]	Usual care	+	+	+	+	+	+	+	+
Stiegelis et al. [32]	Usual care	+	+	+	+	-	-	-	-
Yardley & Kirby, [63]	Wait list control	+	+	+	-	+	+	-	+
Yu et al. [61]	Usual care	+	+	+	+	-	-	-	+

Notes. + criteria clearly described in manuscript and met; — criteria not met or not enough information in manuscript to assess whether met or remained unmet. * = if blinding not possible/not appropriate and a justification was provided, + was given. Attention = some material provided to participants. Usual care = no treatment provided beyond usual care.

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Table 3.
SMDs at each time point for the secondary outcomes

Time points Outcomes	T1			T2			T3		
	# studies	SMD (95% CI)	I ² (%)	# studies	SMD (95% CI)	I ² (%)	# studies	SMD (95% CI)	I ² (%)
Distress	2	-0.07 (-0.44 - 0.30)	0	2	-0.39 (-0.53 - 0.26)	0	2	-0.08 (-0.22 - 0.06)	0
Global QOL	5	0.21 (-0.09 - 0.51)	51.4	2	0.40 (-0.52 - 1.32)	80.8*	2	0.48 (-0.28 - 1.25)	85.9*
Disease-specific QOL	5	-0.19 (-0.47 - 0.09)	67.3*	5	-0.15 (-0.36 - 0.06)	61.9*	2	-0.32 (-0.82 - 0.17)	83.1*
Mental adjustment	2	0.02 (-0.15 - 0.20)	0	1	0.50 (-0.02 - 1.01)	--	1	0.11 (-0.14 - 0.36)	--
Physical functioning	1	0.03 (-0.26 - 0.31)	--	3	-0.07 (-0.52 - 0.38)	93.6*	1	-0.13 (-0.05 - 0.31)	--
Social functioning	1	0.15 (-0.13 - 0.42)	--	2	-0.03 (-0.77 - 0.72)	87.5*	1	0.03 (-0.22 - 0.28)	--
Self-efficacy	2	0.34 (0.06 - 0.62)	19.2	3	0.36 (0.26 - 0.46)	0	0	--	--
Coping									
Helplessness-Hopelessness	1	-0.09 (-0.49 - 0.31)	--	--	--	--	1	-0.11 (-0.28 - 0.07)	--
Cognitive avoidance	1	-0.25 (-0.15 - 0.65)	--	--	--	--	1	0.19 (-0.06 - 0.29)	--
Anxious preoccupation	1	-0.26 (-0.66 - 0.14)	--	--	--	--	--	--	--

Note. SMD = Standard mean difference. I² = Higgin's I² statistic. CI = confidence interval. -- = only one study in that category or no study for that time point. * = $p \leq 0.05$. T1 – baseline to < 3 months post-intervention, T2 – 3 - < 6 months post-intervention, T3 – ≥ 6 months.

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Table 4.

Impact of self-directed psychosocial interventions according to level of guidance

Outcomes	Level of guidance	Number of studies	SMD (95% CI)	I ² (%)
Anxiety	1	2	-0.15 (-0.45 - 0.15)	18.5
	2	2	0.12 (-0.06 - 0.30)	0
	3	10	-0.38 (-0.51 - -0.24)	0
Depression	1	6	-0.25 (-0.49 - -0.02)	57.5*
	2	3	-0.23 (-0.61 - 0.16)	82.0*
	3	11	-0.46 (-0.65 - -0.26)	53.8*
Distress	1	5	-0.24 (-0.43 - -0.05)	45.8
	2	0	---	---
	3	1	-0.09 (-0.27 - 0.08)	---
Global QOL	1	1	0.12 (-0.13 - 0.38)	---
	2	1	0.13 (-0.15 - 0.40)	---
	3	4	0.32 (-0.27 - 0.91)	77.7*
Disease-specific QOL	1	5	-0.15 (-0.38 - 0.08)	51.9
	2	0	---	---
	3	5	-0.26 (-0.63 - 0.10)	82.1*
Mental Health	1	1	0.11 (-0.14 - 0.36)	---
	2	2	0.02 (-0.15 - 0.19)	0
	3	1	0.50 (-0.02 - 1.01)	---
Physical Health	1	3	-0.04 (-0.43 - 0.35)	93.7*
	2	1	0.03 (-0.25 - 0.30)	---
	3	2	0.15 (-0.07 - 0.38)	0
Social functioning	1	2	-0.18 (-0.57 - 0.20)	86.2*
	2	1	0.15 (-0.13 - 0.42)	---
	3	1	0.40 (-0.11 - 0.91)	---
Self-efficacy	1	2	0.37 (0.27 - 0.47)	0
	2	1	0.24 (-0.04 - 0.52)	---
	3	2	0.35 (-0.06 - 0.77)	32.3
Coping – Helplessness-	1	1	-0.09 (-0.49 - 0.31)	
	2	0	---	---

EVALUATION OF WRITTEN SELF-ADMINISTERED INTERVENTIONS

Outcomes	Level of guidance	Number of studies	SMD (95% CI)	I ² (%)
Hopelessness	3	1	-0.11 (-0.28 - 0.07)	
Coping – Cognitive	1	1	0.25 (-0.15 - 0.65)	---
Avoidance	2	0	---	---
	3	1	0.12 (-0.06 - 0.29)	---

Note. --- = no studies available in that category. 1 = self-administered, 2 = minimal guidance, and 3 = guided. -- = only one study in that category or no study for that time point. Coping – Anxious Preoccupation not included, as all studies evaluated self-administered interventions. SMD = Standard mean difference. I² = Higgin's I² statistic. CI = confidence interval. * = $p \leq 0.05$